



Wisconsin Collaborative of Treatment Professionals
FOR EDUCATION AND CAPACITY TRAINING

Substance Use and Pregnancy: Evolution

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Wisconsin Connect

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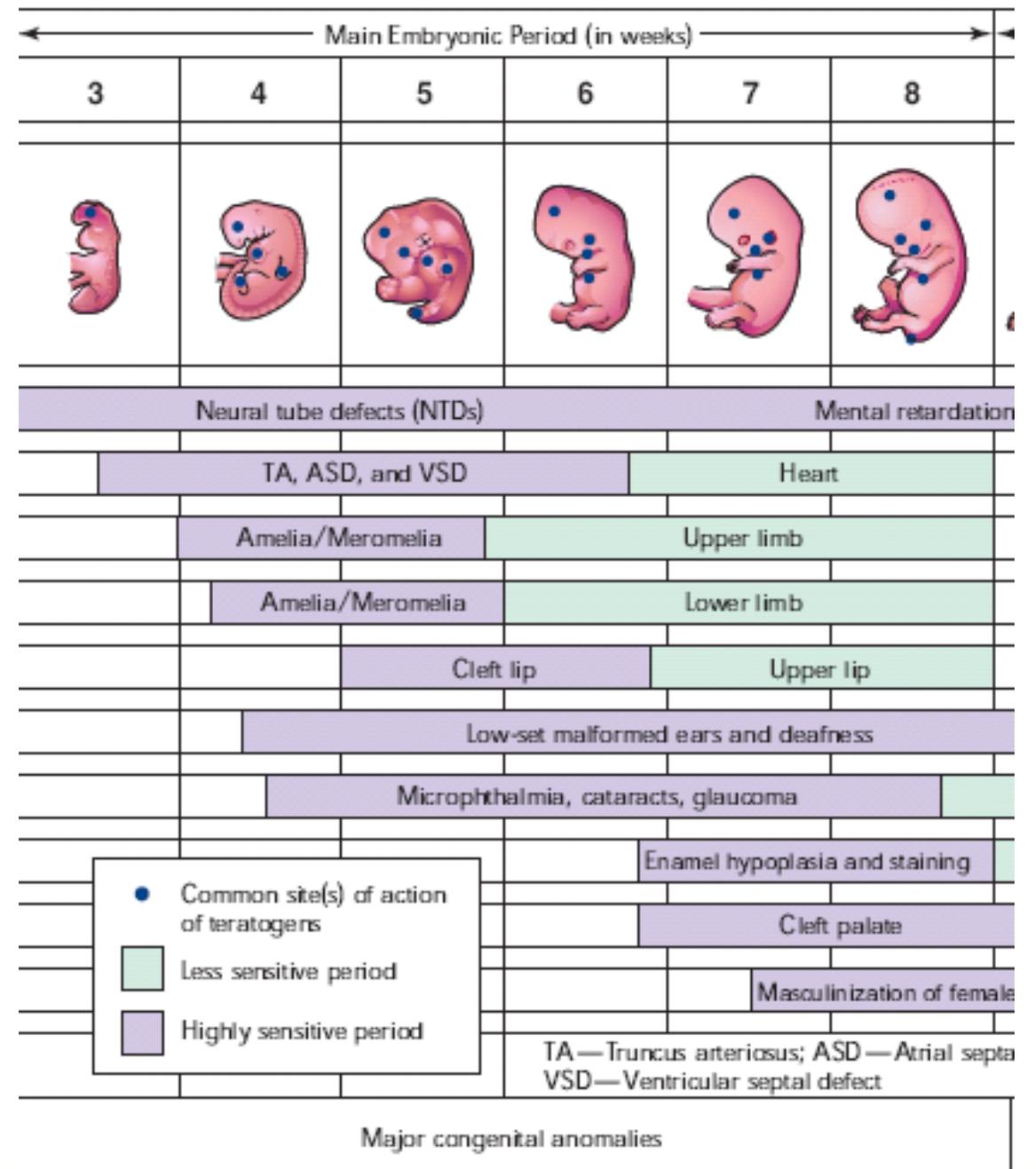
Outline

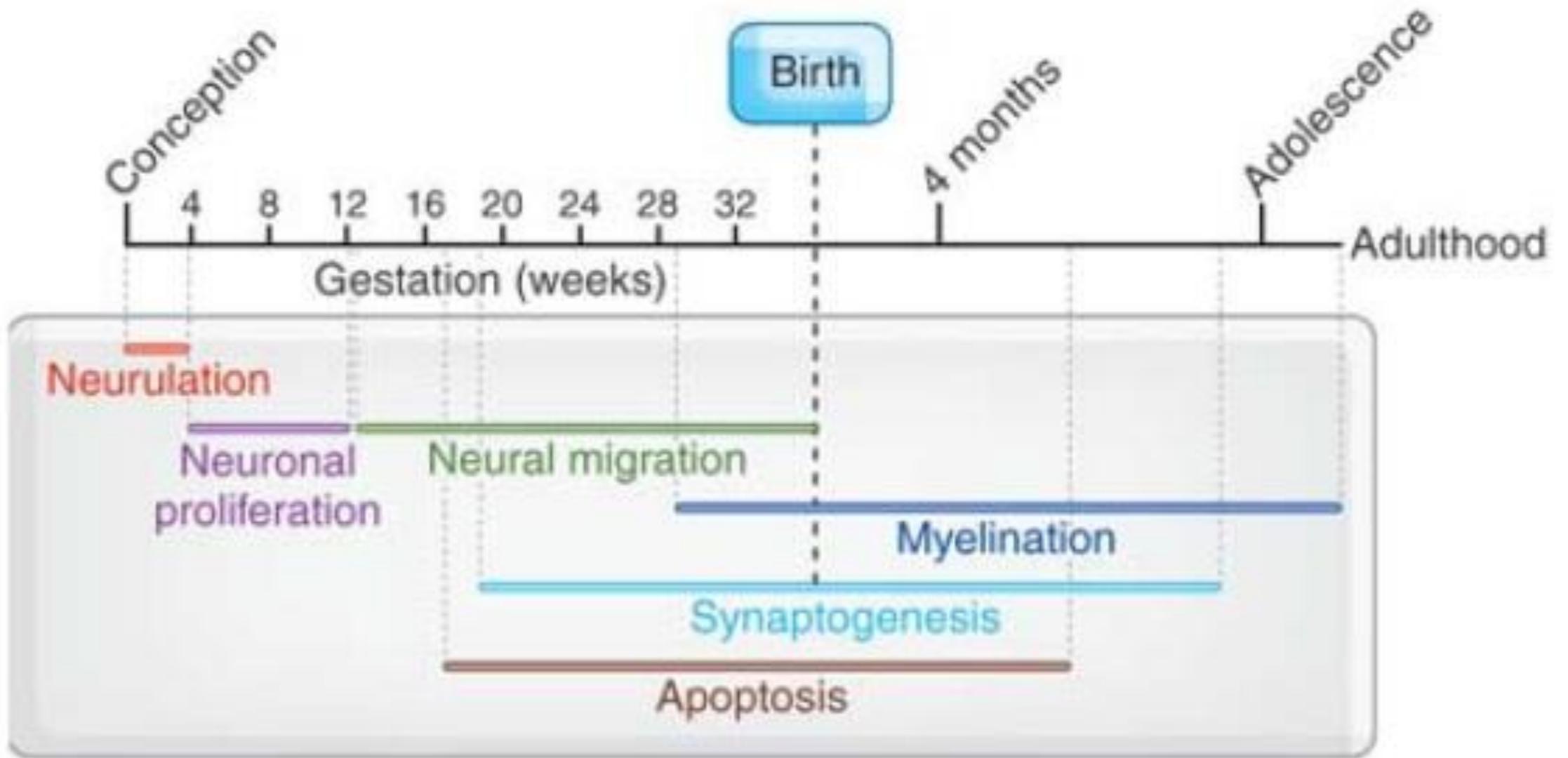
- Background
 - Human development
 - Literature
- Substances
- Screening
- Harm reduction
- Stigma
- Legal issues

Background

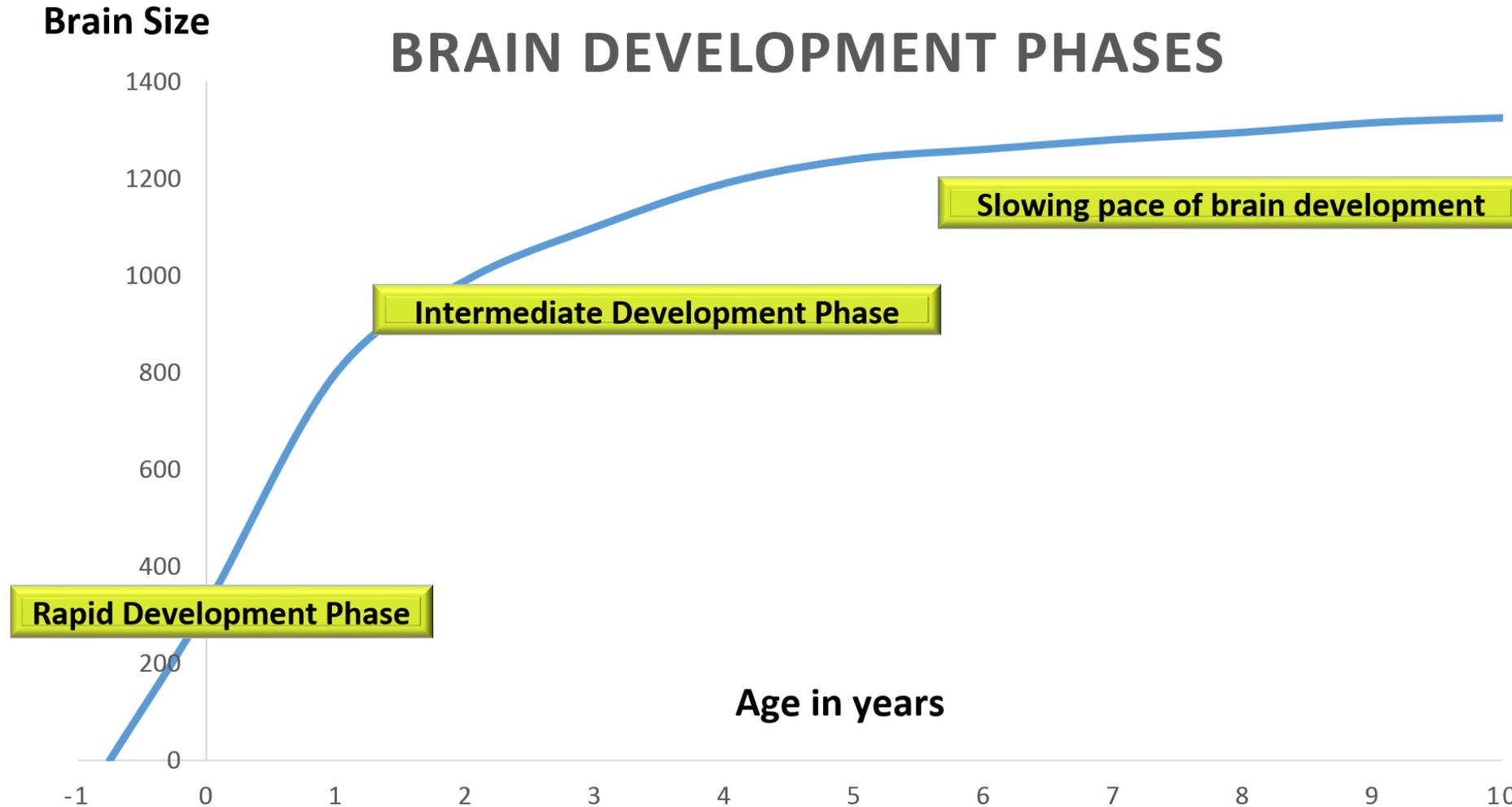
Fetal Development

Embryonic Period





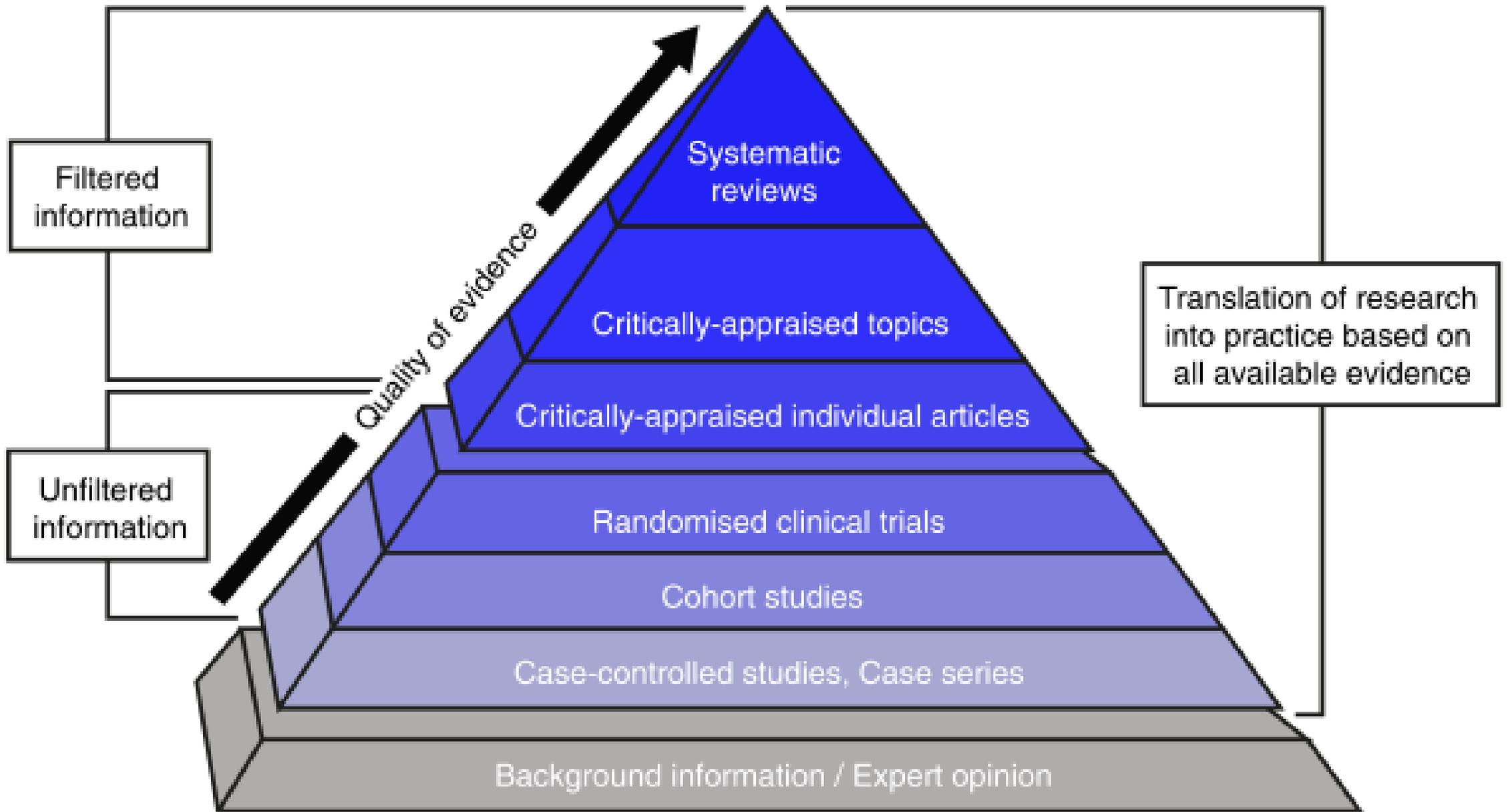
Brain Development



What are the sources?

- PubMed

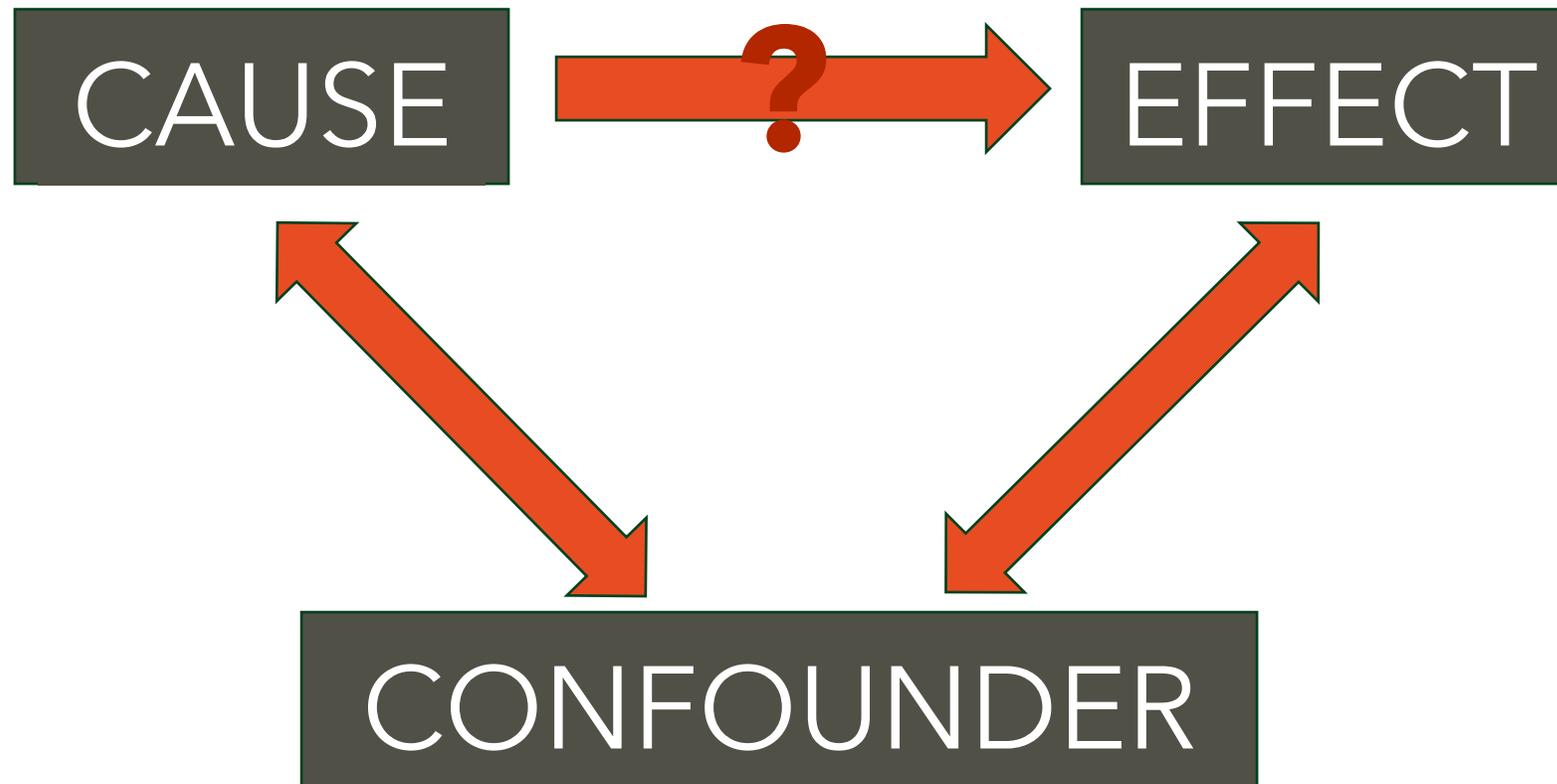
Pregnancy AND	Citations	5-year trend
Alcohol	31702	↑
Opioid	8638	↑
Tobacco	6657	↑↑↑
Cocaine	3014	↑
Cannabis OR marijuana	1863	↔
Methamphetamine	537	↑↑



Confounding



Confounding



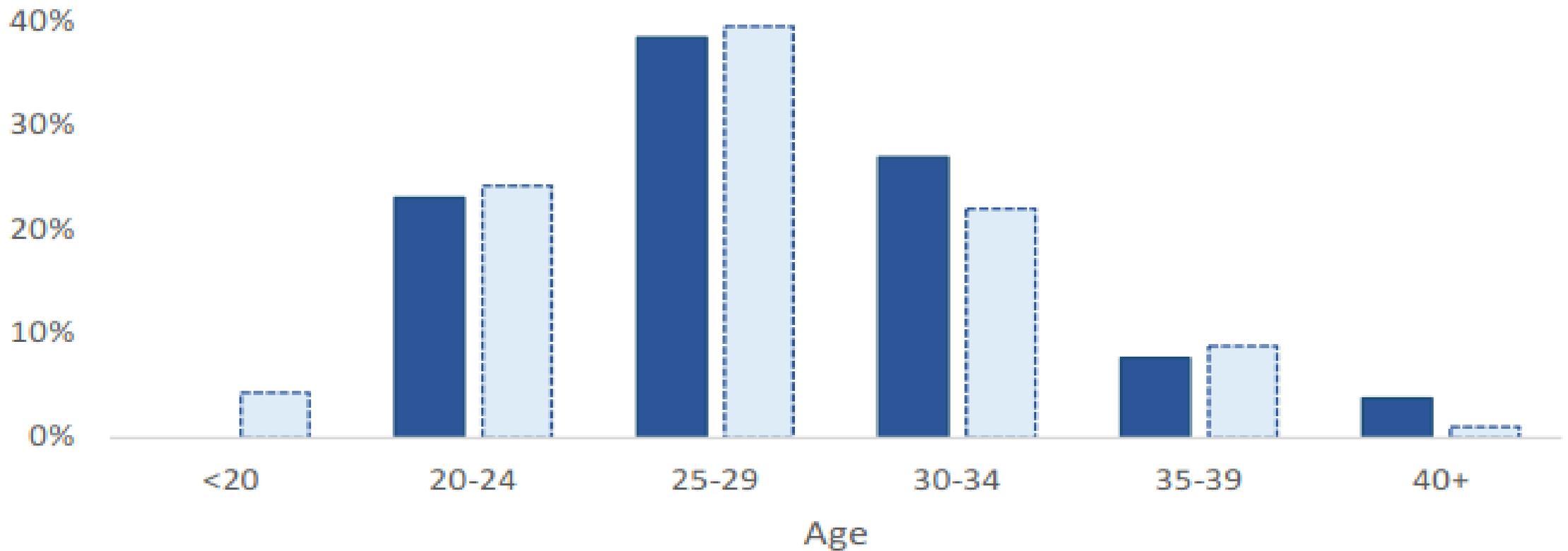
Prevalence of substances among all mothers

Substance	%	n/2531
Any substance	38.0	963
Nicotine	33.0	836
Nicotine and another substance	15.6	396
Tetrahydrocannabinol (THC)	11.3	287
Active THC	8.1	204
Opioids	7.2	182
Short acting opioids	5.0	126
Long acting opioids	2.8	71
Cocaine	3.8	95
Methamphetamine	1.9	48
Amphetamine	0.4	10
Barbiturates	1.3	33
Benzodiazepines	0.6	16
Phencyclidine (PCP)	0	0

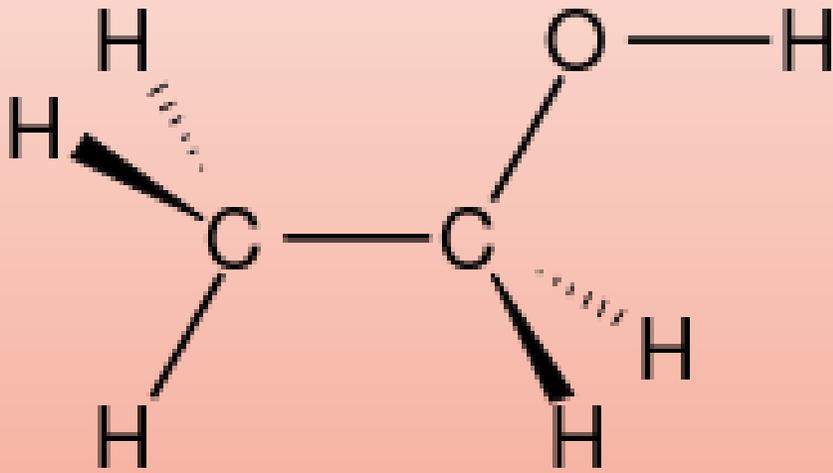
Pregnancy-associated overdose deaths, 2016-2019

■ Overdose □ Non-Overdose

% of total deaths



Ethanol



Alcohol

- Teratogen
- Readily crosses the placenta
- Distributes rapidly in the fetal compartment and accumulates in the amniotic fluid
- Fetal swallowing and renal excretion with reduced metabolism results in prolonged effect on the fetus

Alcohol

- Stillbirth
- Spontaneous abortion
- Premature birth
- Intrauterine growth restriction
- Low birth weight
- FASD

Alcohol Use: Adult population (2019)

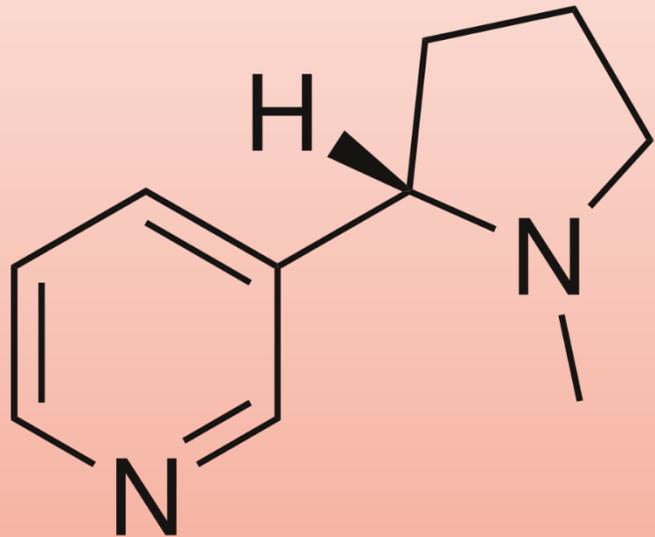
	Use, Past Month	Binge Drinking, Past Month	Perceive Great Risk from Weekly Binge Drinking
Wisconsin	64.8%	21.9%	37.9%
U.S.	55.1%	16.1%	45.0%

Wisconsin PRAMS

During the 3 months before pregnancy	Percent
>7 drinks per week	4.3
Any alcohol	70*

*US rate 55%

Nicotine



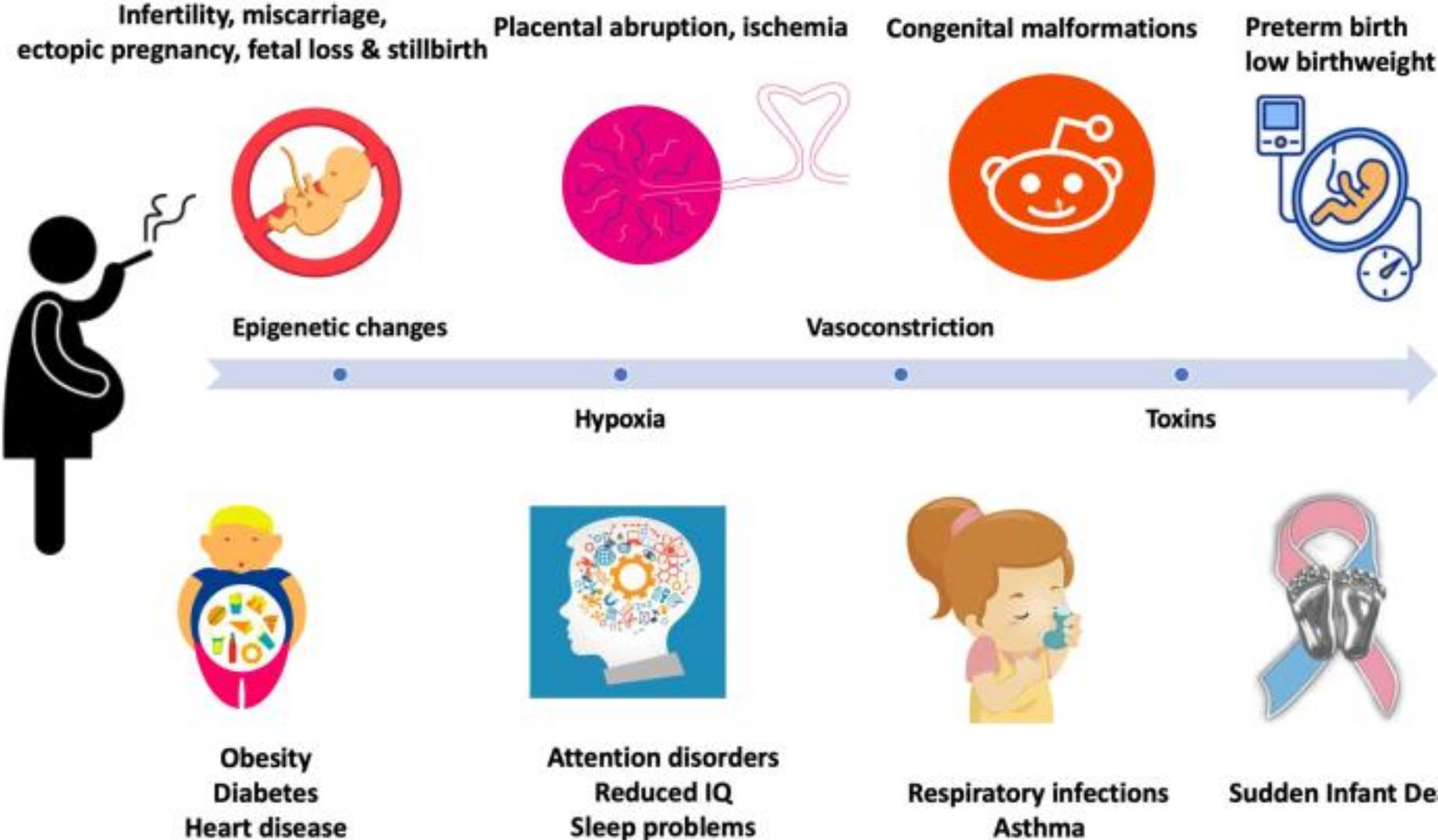
Tobacco

- Forms
 - Smoked
 - Smokeless
 - E-cigarettes
- Toxicity
 - >8400 chemicals, many of which readily cross the placenta
 - Fetal concentration 15% higher than pregnant person
 - Direct effect on placental function

Tobacco

- Toxin exposure
- Hypoxia
- Oxidative stress
- Epigenetic change

Impact of smoking during pregnancy



Trend: Smoking During Pregnancy, Wisconsin, United States



Percentage of mothers who reported smoking cigarettes during pregnancy

● Wisconsin ■ United States

SOURCE:

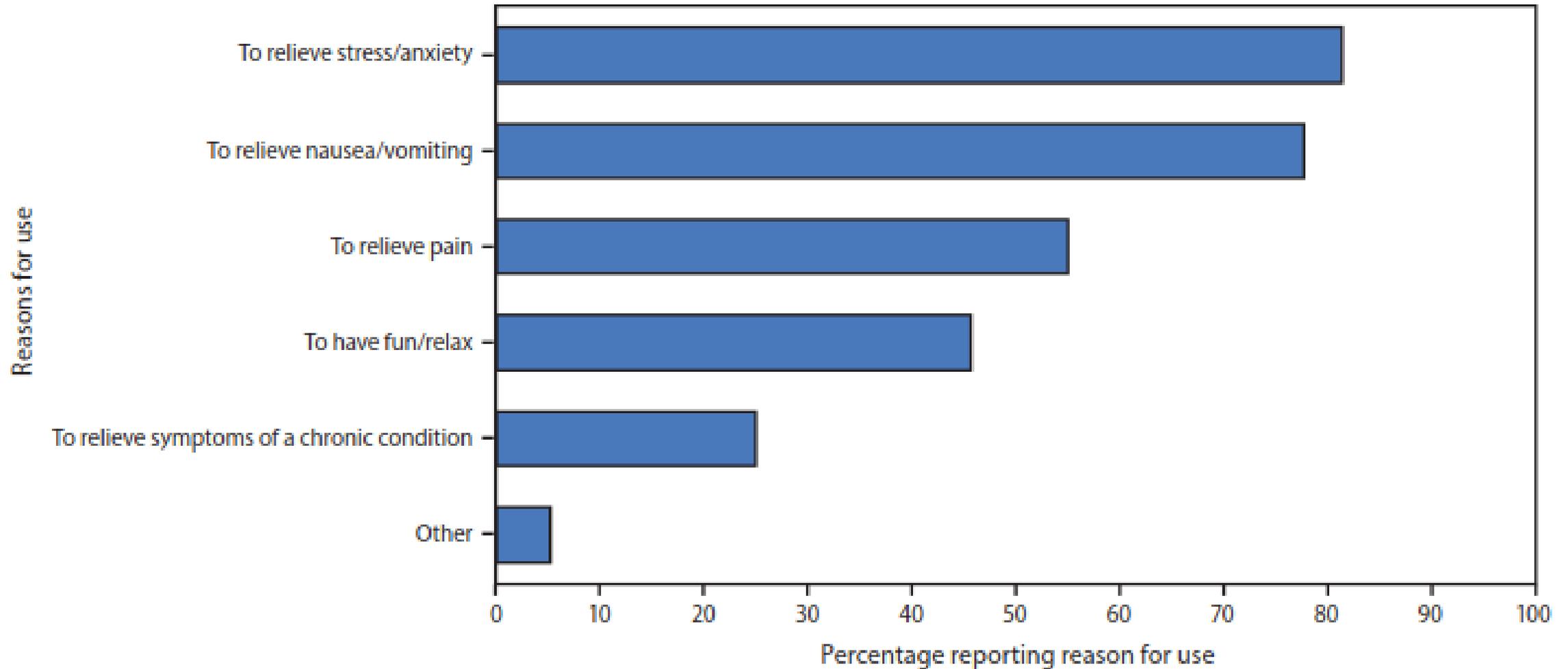
- CDC WONDER, Natality Public Use Files

Cannabis/THC

Cannabis

- “Illicit”
 - Medical use: 36 states and 4 territories
 - Recreational use: 18 states, 2 territories, and DC
- Toxicity
 - >500 chemical compounds
 - 104 cannabinoids
 - THC content increased from ~4% to 12% (some as high as 30%)

Reasons for use



Cannabis

- Contains THC and CBD
- Endocannabinoid receptor agonist
- Delivery: ingestion (absorption >90%) and inhalation (absorption 2-56%)
- Metabolized by the liver (over 80 metabolites; few are active)
- Pregnancy: increased metabolism and clearance
- Easily crossed the placenta
 - May alter neuronal development
- Inhalation of combusted cannabis increases carboxyhemoglobin

Neonatal outcomes

Outcome	Relative Risk	Range	Significance (P)
Birth weight <2500 g	2.06	1.25-3.42	0.005
Small for gest age	1.61	1.44-1.79	<0.001
Preterm delivery	1.28	1.16-1.42	<0.001
NICU admission	1.38	1.18-1.62	<0.001

Outcome	Mean Difference	Range	Significance (P)
Mean birth weight	-112.30 g	-167.19 - -57.41	<0.001
Apgar score (1 min)	-0.26	-0.43 - -0.09	0.002
Head circumference	-0.34 cm	-0.63 - -0.06	0.02

Cannabis

- Paucity of studies; conflicting results
- No evidence for congenital anomalies (confounding)
- Withdrawal symptoms
- Fetal growth effects (?)
- Preterm labor
- Possible associations with:
 - Mood disorders
 - ADHD
 - Academic deficits
 - Subsequent substance use
- Subtle withdrawal (autonomic, state regulation)

Stimulants

Stimulants

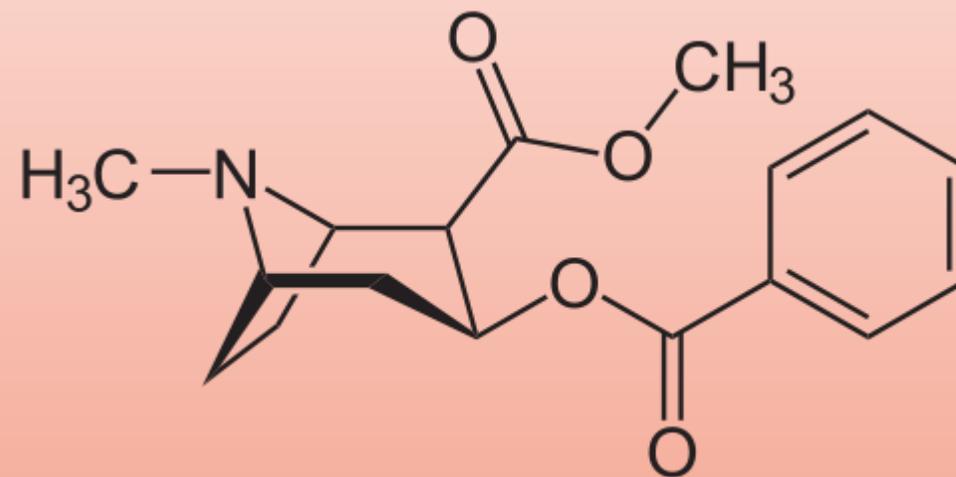
- Stimulate the central nervous system
 - Increase levels of catecholamines
- Cardiovascular effects
 - Vasoconstriction
 - Increased blood pressure
 - Increased heart rate
 - Increased cardiac ectopy
- Substance-specific effects

Cocaine



COCAINE
TOOTHACHE DROPS
Instantaneous Cure!
PRICE 15 CENTS.
Prepared by the
LLOYD MANUFACTURING CO.
219 HUDSON AVE., ALBANY, N. Y.
For sale by all Druggists.
(Registered March 1885.) See other side.

The advertisement features a black and white illustration of a young girl in a red dress and white apron standing next to a young boy in a yellow jacket and hat. They are both looking at a small wooden structure, possibly a toy or a piece of furniture, that the boy is working on. The background shows a house and trees.



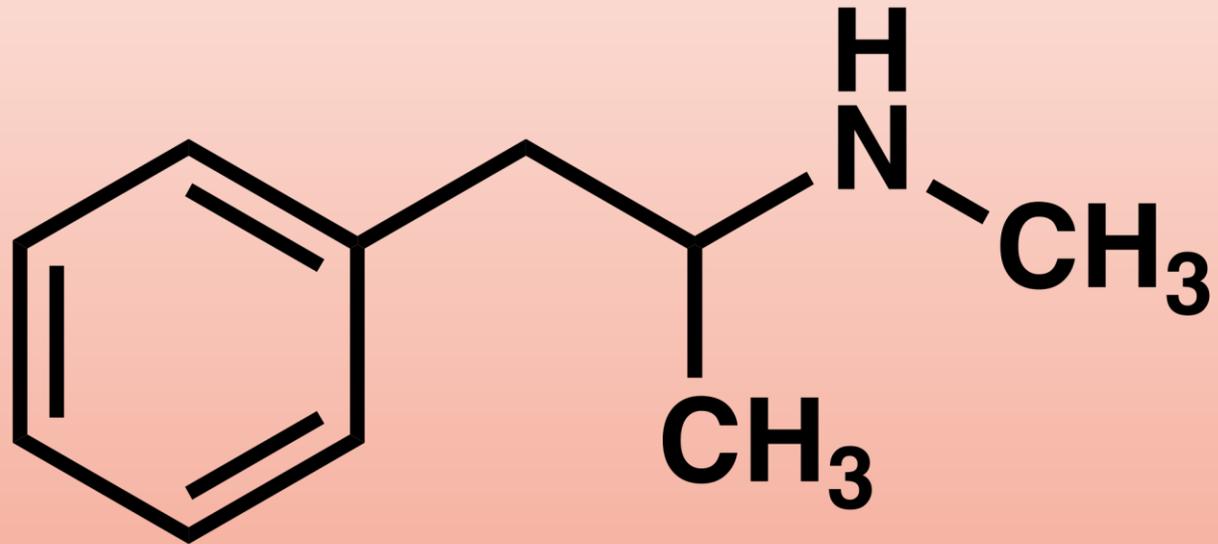
Teratogenicity and withdrawal

- Teratogenicity
 - Hyperbole as Harmful as Cocaine
- Withdrawal vs toxicity

Cocaine

- Reports varied
- Prematurity
- Fetal growth restriction
 - Weight, length, head circumference
 - May persist
- Abnormal infant behavioral outcomes
 - Lower arousal, poorer quality movement and self-regulation, higher excitability, jitteriness
 - May worsen after 12 months

Methamphetamine



Methamphetamine

- Toxicity
 - Direct effects on neurotransmitter release and uptake
 - Indirect effects on cerebral hemodynamics
 - Cerebral blood flow
 - Perfusion pressure
 - Oxygenation
- Challenges
 - Small sample size in published studies
 - Potential confounding

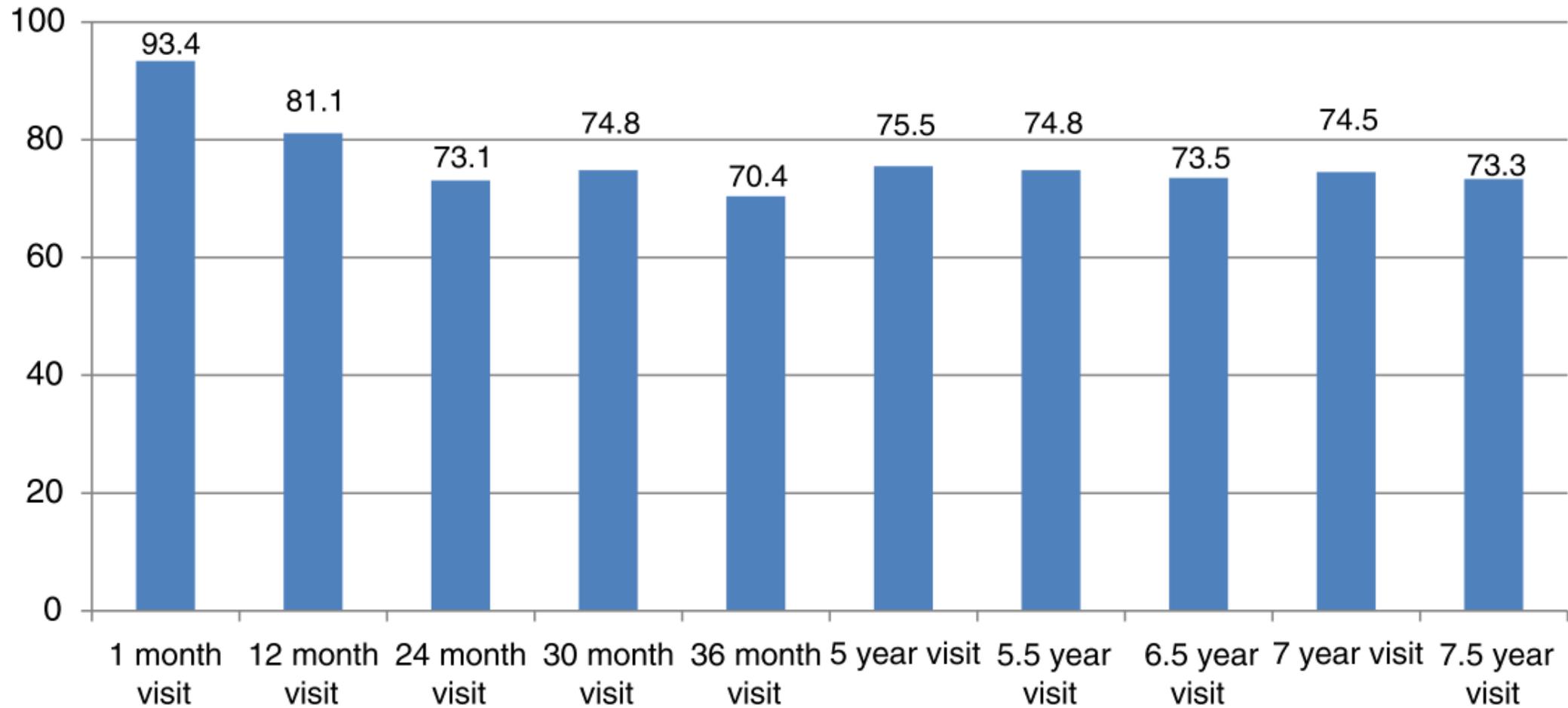
Teratogenicity

- Some reports suggest higher prevalence of congenital malformations, such as cleft palate and limb defects.
- Case-control and prospective studies have not confirmed the findings.
- Risk of teratogenicity: low

IDEAL Study

- Infant Development, Environment, and Lifestyle
- Recruitment from 4 sites over 2-year period
- Screened: 34,833
 - Eligible: 17,961
 - Consented: 3705
 - Longitudinal follow-up: 412
 - Exposed: 204
 - Matched comparisons: 208

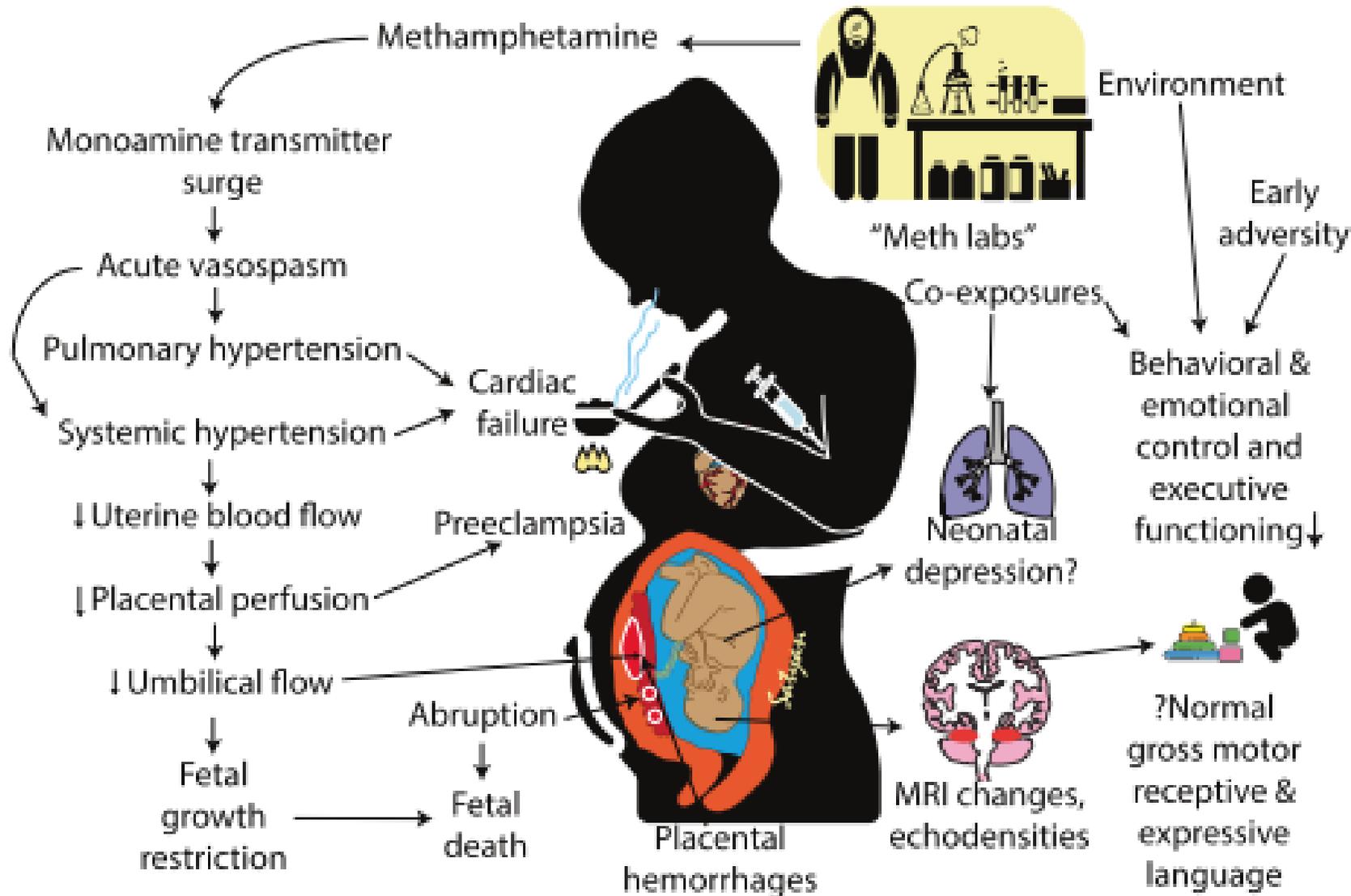
IDEAL Study



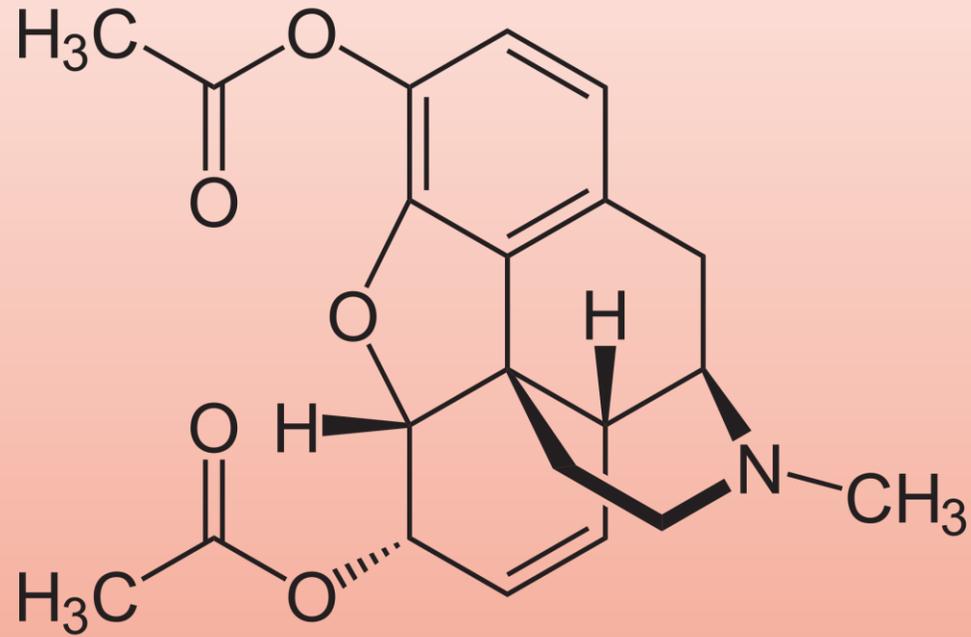
Withdrawal

- Lethargy
 - Abnormal sleep patterns
 - Poor movement quality
 - Poor sucking/excessive sucking
 - Jitteriness
-
- Polysubstance use may be associated with other symptoms

Effects



Opioids



Opioids

- Analgesic compounds
- Bind to opioid receptors

- Teratogenicity
 - Possible small risk for some minor defects

Neonatal Opioid Withdrawal Syndrome (NOWS)

- ~~Neonatal Abstinence Syndrome (NAS)~~
- Not clearly related to dose
- Onset 48-72 hr
- Features
 - Excessive cry/irritability
 - Erratic sleep
 - Startle
 - Tremor
 - Increased tone
 - Yawning
 - Vomiting
 - Sneezing
 - Poor feeding
 - Seizure

Longer-term outcomes

Area	Effect
Academic success	+/-
Attention	+/-
Behavior	+
Comprehensive development	+/-
Cognition	+/-
Sensory processing	+/-
Executive functioning	+/-
Language	+/-
Social/emotional development	+/-

Screening

Screening

American College of Obstetricians and Gynecologists

Screening for substance use should be part of comprehensive obstetric care and should be done at the first prenatal visit in partnership with the pregnant woman.

Screening based only on factors, such as poor adherence to prenatal care or prior adverse pregnancy outcome, can lead to missed cases, and may add to stereotyping and stigma. Therefore, it is essential that screening be universal.

Screening Tools

- 4P's Plus
- 5Ps (parents, peers, partner, pregnancy, past)
- SURP-P (Substance Use Risk Profile-Pregnancy)
- NIDA Quick Screen-ASSIST (Modified Alcohol, Smoking, and Substance Involvement Screening Test)
- CRAFFT (car, relax, alone, forget, friends, trouble)
- Wayne Indirect Drug Use Screener (WIDUS)
- Others

Substance use in context

- Adverse Childhood Experiences
- Depression
- Anxiety
- PTSD
- Other trauma and stressors

Screening discussions

- For women with opioid use disorders, communication failures can mean missed opportunities.
- Effective communication is a necessary component of appropriate and effective therapeutic relationships.
- How do you define success?
- Issues
 - Verbal communication barriers
 - Non-verbal communication
 - Provider attitudes
 - Patient experience

Shared decision-making

- Satisfactory interpersonal relationships
- Information exchange
- Authentic deliberation
- Mutual agreement on results

Harm reduction

Harm reduction

- Set of practical strategies and ideas aimed at reducing negative consequences associated with substance use
- Practical rather than idealized goals
- Grounded in health, social justice, and human rights perspectives
- Effective in reducing morbidity and mortality

Interventions

Interventions	Number of papers
Naloxone-related interventions	23
Safer environments for drug use	13
Overdose prevention education interventions	7
Opioid substitution treatment	4
Drug checking	4
Social network and support interventions	3

Peer support

- Benefits
 - Feelings of trust, safety, comfort in services
 - Reduction in drug-related deaths
 - Increased engagement through referrals
 - Increased naloxone knowledge
 - Psychological benefits for the peer
 - Reduction in harms associated with injection practices
- Barriers
 - Criminalization of drug use
 - Fear of harassment
 - Social stigma

Stigma

Stigma

- **Perceived stigma:** Stigmatized individuals may be generally aware of stigmatizing attitudes and how the public reacts to stigmatized individuals.
- **Self-stigma:** Stigmatized individuals accept societal stereotypes and consequently experience reduced self-esteem and self-efficacy.
- **Public stigma:** Stigmatizing beliefs held by society about a group of people with a shared characteristic.

Stigma and care (patient)

- Shame and embarrassment
- Fear of labeling
- Fear of legal ramifications
- Fear for employment
- Fear of judgment
- Fear of identification
- Incomplete disclosure
- Avoidance of care
- May be compounded by pregnancy and race

Stigma and care (provider)

- Stereotypes
- Addiction as weakness
- Addiction as lack of responsibility
- Anger and blame
- Disapproval
- Non-verbal behaviors
- Punitive measures
- May be compounded by assessment of social status.

Addressing stigma

- Raise awareness
- Promote substance use disorder literacy through health communication campaigns
- Use person-centered, non-stigmatizing language
- Incorporate peer support

Legal Issues

Overview

- Many states have passed legislation designed to protect the fetus.
- In practice, the laws may have a detrimental effect on the mother and infant.

CHAPTER 146

MISCELLANEOUS HEALTH PROVISIONS

- 146.001 Definitions.
- 146.0255 Testing infants for controlled substances or controlled substance analogs.
- 146.0257 Evaluation of infants for fetal alcohol spectrum disorders.
- 146.085 Pay toilets prohibited.
- 146.15 Information.
- 146.65 Rural health dental clinics.
- 146.66 Low-income dental clinics.
- 146.68 Grant for colposcopies and other services.
- 146.71 Determination of death.
- 146.81 Health care records; definitions.

	Consent for Testing	Reporting
Pregnant person	Required	<u>May</u> report
Infant	Not required	Required

CHAPTER 48

CHILDREN'S CODE

SUBCHAPTER I GENERAL PROVISIONS

- 48.01 Title and legislative purpose.
- 48.02 Definitions.
- 48.022 Electronic filing.
- 48.023 Guardianship.

- 48.317 Jeopardy.
- 48.32 Consent decree.

SUBCHAPTER VI DISPOSITION

- 48.33 Court reports.
- 48.334 Dispositional hearings.

48.193 Taking an adult expectant mother into custody.

(1) An adult expectant mother of an unborn child may be taken into custody under any of the following:

- (a) A warrant.
- (b) A capias issued by a judge under s. 48.28.

Risks of incarceration

- Inadequate prenatal care
- Forced opioid withdrawal
- Inadequate Alcohol and Other Drug Abuse (AODA) care
- Justice and equity issues
- Violation of medical and legal rights

Thank you.

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